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Changes in the Composition of Aggregate Investment

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- | | |
|----------------|--|
| .. | not available for any reference period |
| ... | not available for a specific reference period |
| ... | not applicable |
| 0 | true zero or a value rounded to zero |
| 0 ^h | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| p | preliminary |
| r | revised |
| x | suppressed to meet the confidentiality requirements of the <i>Statistics Act</i> |
| E | use with caution |
| F | too unreliable to be published |
| * | significantly different from reference category ($p < 0.05$) |



Changes in the Composition of Aggregate Investment

By Cyndi Bloskie, Valérie Gaudreault, and Guy Gellatly

This *Economic Insights* article reports on the composition of investment expenditures in Canada. It highlights major changes in the distribution of capital outlays over the last decade, as investments in structural assets accelerated in resource-based industries and regions. The article also discusses the preliminary actual estimates for 2012 and investment intentions for 2013, published in February 2013. It is one of a series of *Economic Insights* articles designed to inform about ongoing developments in the Canadian economy.

Capital expenditures have contributed markedly to real output growth in the wake of the 2008-2009 recession. Non-residential business investments in structures and machinery and equipment (M&E), which account for about half of all investment spending in Canada, advanced in 12 of the last 13 quarters.¹ Since the trough in real output in 2009 Q2, the volume of non-residential capital spending by businesses has increased by 37%, with similar gains in structures and machinery and equipment. Structures have led investment spending in more recent quarters, prior to the declines posted in 2012 Q3.²

Cross (2011) notes the accelerated pace of non-residential business capital expenditures during the recent recovery compared to previous recovery periods, and highlights longer-term changes in the industrial composition of business investment led by the growth in energy and mining.

Data on investment spending and investment intentions garner considerable attention because of the positive contribution that capital spending makes to productivity growth. Using data from the Canadian Productivity Accounts, Baldwin and Gu (2009) demonstrate that long-run changes in business sector productivity are primarily due to increases in capital intensity—in effect the volume of machinery and equipment (M&E) and structural assets that are available to support the production of goods and services, as measured per unit of labour worked. From 1961 to 2008, Canadian labour productivity grew on average by 2.0% per year, with 1.3% of this 2.0% annualized growth attributable to increases in capital intensity. Changes in capital intensity depend on the flows of services that firms receive from current investment and the accumulated stock of past investments.

Recent analyses of Canadian investment patterns have focussed attention on the types of capital assets being acquired. Sharpe and Andrews (2012) have examined the persistent gap in

the volume of information and technology investment between Canada and the U.S., concentrating on assets that have been closely linked to improvements in business productivity. The Conference Board of Canada (2013) has also emphasized the embodied technology in many M&E investments, highlighting the extent to which Canada's M&E investment rates lag behind those in other OECD countries.³

This article examines the structure of investment spending in Canada. It utilizes the data on private and public investment intentions released in February 2013—the preliminary actual estimates for 2012 and investment intentions for 2013—and highlights long term changes in the industrial composition of investment spending since the onset of the commodities boom. Trends in business sector investment over the last decade are compared to those in public sector industries and in residential housing. Investment outlays in business sector industries are examined in more detail, highlighting the compositional shift towards structural assets in resource-based regions. The data on 2013 intentions are used to supplement the discussion of these longer term trends.

Data on investment spending

Statistics Canada publishes annual data on investment spending and investment intentions based on a sample survey of approximately 28,000 private and public organizations.⁴ The combined outlays for private and public organizations are allocated to three sectors: business sector industries; public sector industries (health, education and public administration) and investments in residential housing. The sum of private and public outlays in business sector industries is referred to here as business investment.⁵

1 From 2000 to 2011, non-residential business capital spending on structures and M&E accounted, on average, for about 45% of all annual investment spending. Data on output and expenditure-based GDP components are available in CANSIM table no. 380-0064.

2 For a review of major economic aggregates in the post-recession period, see Bloskie and Gellatly (2012).

3 For an overview of firm-based research on technology and productivity from Statistics Canada surveys, see Baldwin and Gellatly (2007).

4 The survey is the Capital and Repair Expenditures (CAPEX) Survey; for more information, see <http://www23.statcan.gc.ca/81/ind/p2SV.pl?Function=getSurvey&SDDS=2803&lang=eng&nav=2803&id=2803>.

5 There are important differences in coverage between the investment data that are published in the Canadian System of National Accounts and those published from the CAPEX survey. For example, the investment data in the System of National Accounts include capital expenditures on research and development and military weapons. Unless otherwise specified, the data reported in this article are current dollar estimates from the CAPEX survey, and are derived from Statistics Canada CANSIM table no. 029-0005 Trends in these investment data are similar to those reported in the National Accounts for the reference period examined in this article.

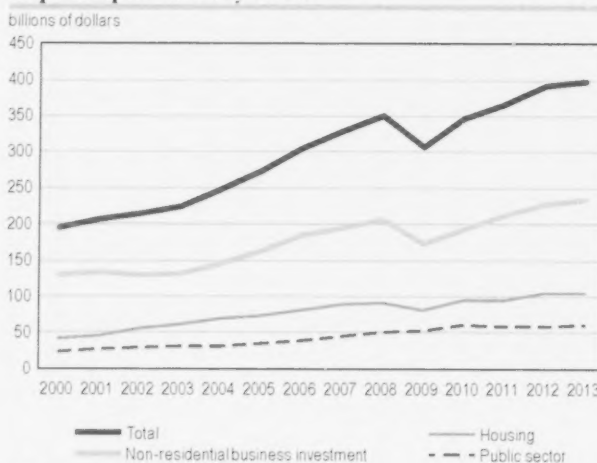
Capital expenditures are further broken down into two basic asset classes: (1) investments in structures, which include expenditures on residential housing construction and non-residential expenditures on the construction of office buildings, plants, utility lines, roads, sewers, bridges, and (2) investments in machinery and equipment, which include spending on computers, automobiles, and business machinery.

Aggregate investment spending accounts for about 20% of Canada's annual gross domestic product, a percentage that has remained largely stable over the last decade.⁶ From 2000 to 2011, aggregate investment spending, measured in current dollars, increased from \$194.9 billion to \$365.2 billion, growing at an average of 6% per year. Preliminary actuals for 2012 put investment at \$391.5 billion, and 2013 intentions stand at \$398.2 billion (Chart 1). Capital expenditures on structures and machinery and equipment assets by business sector industries account for the largest component of overall investment spending.

Non-residential business expenditures account for less aggregate investment

While the ratio of capital investment-to-gross domestic product has remained stable, the composition of capital spending in Canada has changed markedly in the past decade. Nominal non-residential business sector spending on capital assets grew by 76% from 2000 to 2012, from \$129.4 billion in 2000 to \$227.4 billion in 2012. During this period, however, the relative contribution of business sector industries to aggregate investment spending declined, from 66% in 2000 to 58% in 2012. This partly reflected

Chart 1
Capital expenditures by sector



Source: Statistics Canada, CANSIM table 029-0005.

investment trends in the early 2000s, which saw stronger growth in residential housing and public sector investment. The growth in non-residential business investment was negative in 2002 (-3.4%), led by reductions in information and culture industries, manufacturing and mining. By comparison, investments in housing and public sector industries increased by 19% and 11% in that year. As a result, the contribution of business investment to total capital expenditures fell to 60% in 2002, remaining relatively constant until 2008.

Table 1
Capital expenditures by sector

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012 ¹	2013 ²
	annual percentage change													
Total investment	5.6	6.1	3.4	5.1	10.2	10.2	11.8	7.7	6.2	-12.2	13.1	5.3	7.2	1.7
Non-residential business investment	4.7	3.0	-3.4	2.9	10.0	12.2	12.4	6.2	5.8	-16.6	11.3	10.5	7.4	2.8
Housing	8.5	13.0	18.9	11.3	13.7	5.0	11.1	9.1	3.4	-12.3	16.8	1.3	9.3	0.2
Public sector investment	5.6	11.1	10.6	3.0	4.4	12.4	10.5	11.7	13.6	6.0	13.3	-4.8	3.1	0.2
	percent share of total investment spending													
Non-residential business investment	66.4	64.4	60.2	58.9	58.8	59.9	60.2	59.4	59.1	56.2	55.3	58.0	58.1	58.7
Housing	21.1	22.5	25.9	27.4	28.3	26.9	26.8	27.1	26.4	26.4	27.2	26.2	26.7	26.3
Public sector investment	12.5	13.0	13.9	13.7	12.9	13.2	13.1	13.5	14.5	17.5	17.5	15.8	15.2	15.0

Notes:

1. Preliminary actual data

2. Intentions

Source: CANSIM table 029-0005

⁶ This investment share is based on annualized estimates of gross fixed capital formation and gross domestic product from the Canadian Economic Accounts; see CANSIM table no. 380-0064



During the mid 2000s, large year-to-year increases in investment spending occurred in all the main components of capital investment. Business sector industries posted double-digit annual increases from 2004 to 2006, led by investments in mining, oil and gas industries as commodity prices increased. Investments in public sector industries and residential housing also grew by double digits in two of these three years. Aggregate investment spending continued to increase prior to the recession, albeit at a more modest pace, before declining by 12% in 2009. Non-residential business investment fell by 17% in that year, while investment in housing declined by 12%. By contrast, public sector investments expanded by 6%. As a result, the share of non-residential business spending in aggregate investment declined to 56% in 2009, and remained there in 2010, when capital spending in each of these three areas rebounded.

Non-residential business investment expanded by 10% in 2011, with preliminary actuals for 2012 rising 7%, and investment intentions for 2013 up 2.8% to \$233.7 billion. Similarly, investment in housing and public sector industries expanded by 9% and 3% respectively in 2012, with 2013 intentions essentially unchanged at \$105 billion and \$60 billion.

Underlying the aggregate data on non-residential business investment are considerable changes in industrial and regional composition. An overview of major changes follows.

Non-residential business investments in structures outpace machinery and equipment

Investments in structures—commercial assets such as plants, buildings and engineering structures—now account for a majority of non-residential business capital spending in Canada (Chart 2). From 2000 to 2012, spending on these construction assets grew on average by 9% per year, compared to 2.1% annual growth in investment spending on machinery and equipment

assets. As a result, the share of total non-residential business investment for construction assets increased steadily, from 38% in 2000 to 58% in 2011. Preliminary actuals for 2012 and data on 2013 intentions exhibit a similar pattern.

Spending on structures led by gains in mining, oil and gas

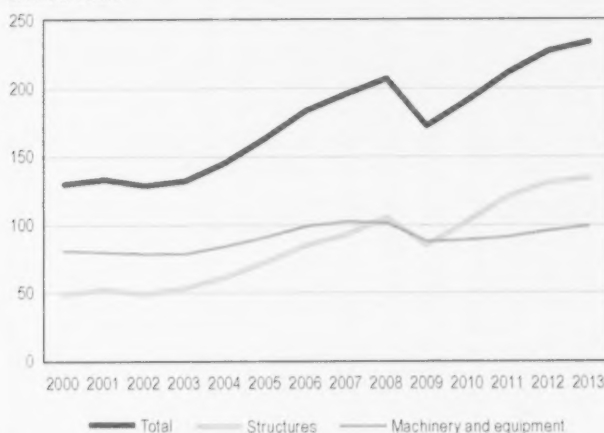
The changing mix between structures and M&E assets underscores the structural developments underway in different industries. Investments in construction assets accounted for most capital spending in mining and oil and gas industries, as large investments in infrastructure are often required to bring new production facilities on line. The share of total business spending accounted for by this sector has increased markedly. Annual capital expenditures on both structures and M&E in mining, oil and gas industries grew on average by 14% during the 2000s, from \$25.1 billion in 2000 to \$81.4 billion in 2012. As a result, the sector's share of non-residential business investment increased from 19% in 2000 to 36% in 2012.

Structures account for about 8 out of every 10 investment dollars spent in mining, oil and gas industries. In 2000, these resource industries accounted for 43% of all non-residential spending on structural assets in the business sector; by 2012, over one half of all investment spending on structures occurred in this sector. Mining, oil and gas industries have also increased their share of total M&E investment, from 5% of machinery and equipment spending in 2000 to 12% in 2012.

Investment shares in both structures and machinery and equipment fell significantly in manufacturing industries during the last decade. Annual capital expenditures in 2012 were \$20.4 billion, with 2013 intentions at \$20.9 billion. From 2000 to 2012, manufacturing's share of non-residential business sector investment fell from 18% to 9%. In terms of M&E

Chart 2
Non-residential business investment by type of asset

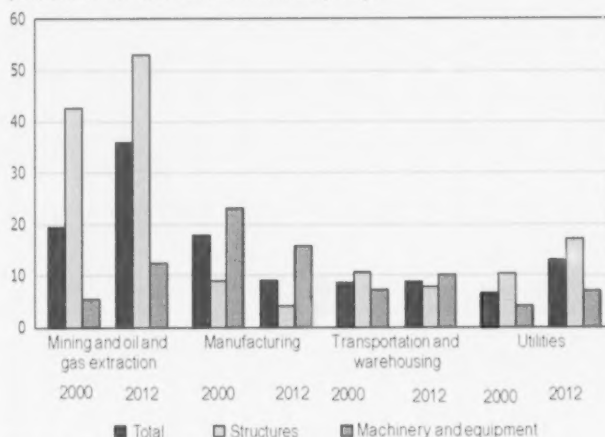
billions of dollars



Source: Statistics Canada, CANSIM table 029-0005.

Chart 3
Capital expenditures by selected industries

percent share of non-residential business investment spending



Source: Statistics Canada, CANSIM table 029-0005.

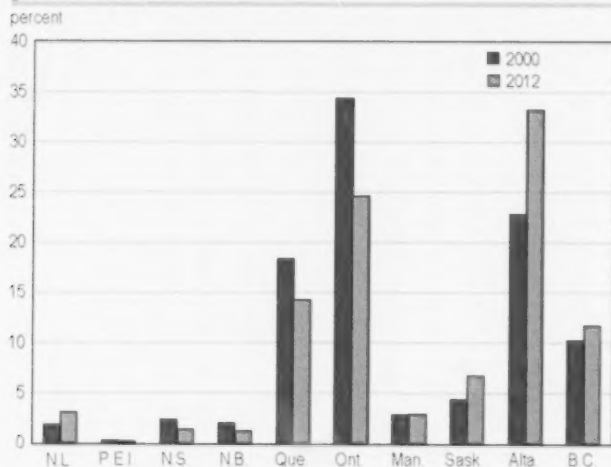


spending, which accounts for about 85% of investment outlays in manufacturing, the sector's share of total M&E investment declined from 23% to 16%.

Investment dollars flow westward

The growth of western Canada's resource industries, coupled with aggregate declines in manufacturing, has had a sizable impact on the distribution of investment spending in Canada (Chart 4). From 2000 to 2012, all of the western provinces increased their share of non-residential business investment, while declines were observed in Ontario, Quebec and the maritime provinces. During this period, average annual non-residential capital expenditures in business sector industries increased by about 10% in Saskatchewan, Alberta, and Newfoundland and Labrador, well above the national average of 5.1%.

Chart 4
Distribution of non-residential business investment by province, 2000 and 2012



Source: Statistics Canada, CANSIM table 029-0005

With six years of double-digit gains, Alberta's share of non-residential business investment rose from 23% in 2000 to 33% by 2012, with levels of investment spending in the province surpassing that of Ontario in recent years. Mining and oil and gas extraction industries led the growth, increasing from \$16.2 billion in 2000 to \$48.5 billion in 2012. In 2012, these industries accounted for two-thirds of all non-residential business investment dollars spent in Alberta, and about 88% of these expenditures were on structures. Investments in utilities, construction and transportation & warehousing industries in Alberta were also related to growth in the oil sands. Investment intentions for 2013 are up 3.2%.

Saskatchewan's share of aggregate non-residential business investment increased from 4% in 2000 to 7% in 2012. Capital spending in the province expanded from 2005, dominated by investments in mining and oil and gas extraction industries, which rose from \$2.0 billion in 2000 to \$8.3 billion in 2012, and accounted for half of Saskatchewan's business investment in that year. Investment spending in the province was positive over the decade. Non-residential business investment intentions for 2013 declined by 2.8% from 2012 levels.

There have been long term declines in Ontario and Quebec's non-residential business investment shares. In 2000, 34% of all non-residential business capital expenditures were invested in Ontario. By 2012, the province's investment share had fallen to 25%. This decline was concentrated in Ontario's manufacturing sector. Industries in Ontario that saw large increases in investment spending during this period included utilities, mining, oil and gas, along with transportation and warehousing industries. After a preliminary 2% gain in non-residential business investment in 2012, spending intentions for 2013 are up a further 3.3%.

Expenditures in Quebec followed a similar pattern, as the province's share of non-residential business capital expenditures declined by four percentage points over the decade, to 14% in 2012. Manufacturing industries again led the decline, while investments in utilities expanded to over 20% of total non-residential business investment by 2012. Investment in mining also accelerated through the decade, with spending intentions more than tripling by 2013.

In the Atlantic provinces, Newfoundland and Labrador's share of non-residential business investment has steadily increased since 2007, primarily due to spending in mining and oil and gas extraction industries. While both Prince Edward Island and Nova Scotia posted positive intentions for investment in 2013, spending intentions declined in New Brunswick.

Conclusion

This article highlights recent changes in the composition of capital spending in Canada, as investments in structural assets accelerated in resource-based industries and regions. Mining, oil and gas industries accounted for over one-third of non-residential business investment in 2012, and over one-half of all capital spending on structures in business sector industries. By comparison, the manufacturing sector accounted for 9% of non-residential business investment spending. In 2012, Saskatchewan and Alberta together accounted for 40.1% of non-residential business sector investment in Canada, matching the combined share of Ontario and Quebec. Data on 2013 intentions point to a continuation of these trends.



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